



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

PATENT

In re patent  
appln. of : Keith C. Hong, et al.

Appln. No: 10/600,847

Filed: June 20, 2003

For: **ALGAE RESISTANT ROOFING  
GRANULES WITH CONTROLLED  
ALGAECIDE LEACHING RATES,  
ALGAE RESISTANT SHINGLES, AND  
PROCESS FOR PRODUCING SAME**

GAU: 1762

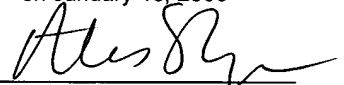
Examiner: Elena Tsoy

Docket No: 008-02

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on January 18, 2006

  
Alex R. Sluzas, Reg. No. 28,669

Mail Stop Amendment  
Commissioner of Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

TRANSMITTAL SHEET

Sir:

Enclosed and attached hereto are the following documents for filing in the U.S.  
Patent and Trademark Office:

1. This transmittal letter in duplicate;
2. Declaration Under Rule 131 (37 C.F.R. § 1.131) and;
3. Acknowledgment postcard to be date-stamped and returned to Paul & Paul.

The Commissioner is hereby authorized to charge any additional fees associated  
with this communication, or credit any overpayment, to Paul & Paul Deposit Account No.16-  
0750, Order No. 3701.

Respectfully submitted,



Alex R. Sluzas  
Registration No. 28,669

January 18, 2006

Order No. 3701

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re patent  
appln. of : Keith C. Hong, et al.

Appln. No: 10/600,847

Filed: June 20, 2003

For: **ALGAE RESISTANT ROOFING  
GRANULES WITH CONTROLLED  
ALGAECIDE LEACHING RATES,  
ALGAE RESISTANT SHINGLES, AND  
PROCESS FOR PRODUCING SAME**

Group Art  
Unit: 1762

Examiner: Elena Tsoy

Docket No: 008-02

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Mail Stop Amendment  
Commissioner of Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

**DECLARATION UNDER RULE 131 (37 C.F.R. § 1.131)**

As an inventor of the subject matter claimed in the above-referenced patent application, I declare the following:

1. Figures 1 and 2 appended hereto are electron micrographs of algae-resistant granules produced before November 27, 2002 by the process of Example 5 of the disclosure of the above-referenced patent application.
2. Exhibit A hereto is a copy of page 56 of the laboratory notebook of Keith Hong, pages 58-59 and 70-75 of the laboratory notebook of Mr. Justin Scanlon, working under the direction of Keith Hong, and pages 7, 38 and 48 of the laboratory notebook of Mr. Adam Wolfgang, working under the direction of Keith Hong, and recorded before November 27, 2002 showing preparation of the algae-resistant roofing granules of Figures 1 and 2. Date information has been redacted.

**BEST AVAILABLE COPY**

3. Figure 3 appended hereto is an electron micrograph of algae-resistant granules produced before November 27, 2002 by the process of Example 4 of the disclosure of the above-referenced patent application.
4. Exhibit B hereto is a copy of nine pages from the laboratory notebook of Keith Hong showing preparation of the algae-resistant roofing granules of Figure 3. Date information has been redacted.
5. Figure 4 appended hereto is a photograph taken before November 27, 2002 of a test roof prior to the application of shingles thereto, showing the intended locations for installing various types of test and control shingles. The areas marked "NW T-1" and "NW T-2" are marked for the installation of asphalt shingles manufactured using algae-resistant granules made according to the process of present invention at applicants' assignee's Norwood manufacturing facility.
6. Figure 5 appended hereto is a photograph taken before November 27, 2002 of the test roof of Figure 4 subsequent to the installation of shingles thereon. Asphalt shingles manufactured using algae-resistant granules made according to the process of the present invention at applicants' assignee's Norwood manufacturing facility have been applied to the test roof at the locations indicated in Figure 4.
7. Exhibit C hereto is a copy of a manufacturing record evidencing the production of the algae-resistant granules used to manufacture the asphalt shingles installed in the area marked "NW T-1." (or T-1) Date information has been redacted.
8. Figure 6 appended hereto is a photograph taken before November 27, 2002 of an exterior exposure test station subsequent to the installation of shingles thereon. Asphalt shingles manufactured using algae-resistant granules made according to the process of the present invention at applicants' assignee's Norwood manufacturing facility have been applied to the exterior exposure station.

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

Inventor's signature:   
Keith C. Hong

Date: Jan. 13, 2006  
KHB

Inventor's signature:   
Hushu M. Kalkanoglu

Date: 1/16/2006

Inventor's signature:   
Ming L. Shiao

Date: 1/13/2006

# LABORATORY NOTEBOOK

Notebook No.: Kt-1

Assigned to: Keith Heng

Date: \_\_\_\_\_

Use Nalge Cat. No.

6301-1000  
to reorder.

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Printed in U.S.A.

## Algae-Resistant Granules

In order to improve + increase diffusion of Cu + Zn ions from the inner layers of the algae-resistant granules, one needs to provide open channels within the copper + zinc oxide layer. One idea is to add pore inducers.

My dear Vitrified Veterans,

Who has an answer for our former Organic friend? See below.

My first reaction would be bubbled alumina, although it would result in closed porosity. If closed porosity is not a problem, perhaps glass spheres would offer a more controlled size distribution.

Mike

—Original Message—

From: Hong, Keith C.  
Sent:  
To: Mahoney, Michael  
Subject: Pore Inducers

Hi Mike,

Long time no see. How is everything? I understand you guys are busy with the World Meetings lately, hope it all goes well.

Have a question on pore inducers. I am interested in some sort of compounds that would introduce porosity into my coating in a controlled manner. The coating consists of sodium silicate, clay and pigments, and is generally fired at 900 °F. The thickness is 10-30 microns. What types of pore inducers would you recommend?

Thanks a lot

Keith Hong  
Phone (610) 341-6204

Read and Understood By

Keith Hong

Signed

Date

Signed

Date

Algae-Resistant Granules

In order to improve + increase diffusion of Cu + Zn ions from the inner layers of the algae-resistant granules, one needs to provide open channels within the copper + zinc oxide layer. One idea is to add pore inducers into the layer. The pore inducers are usually organic materials which would burn off or evaporate during the firing of the granules at 925°F nominal temperature.

Will discuss this idea with our friends at the Abrasive Branch since they use walnut shell and other natural materials as pore inducers in vitrified grinding wheels.

Continued on Page \_\_\_\_\_

Read and Understood By

Ken Hry

Signed

Date

Signed

Date

# LABORATORY NOTEBOOK

Notebook No.: ONE  
Assigned to: Justin W Scanlon  
Date: \_\_\_\_\_

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to reorder.

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Copper Granules Method: BM, 25, 356, 444  
1st Coating JWSL-58A

Raw Materials

#1 Wrentham Slate

Clay

 $\text{Cu}_2\text{O}$  (Purple Co. HP11, 5355) $\text{ZnO}$  (Zinc 350, 0229)

Sodium Silicate (

Water

WT (g)

1000.00

30.00

35.0285

1.3544

40.02

19.5

Fired at 900°F

2nd CoatingRaw Materials

#1 Wrentham Slate

Clay

 $\text{Cu}_2\text{O}$  (Purple Co. HP11, 5355) $\text{ZnO}$  (Zinc 350, 0229)

Sodium Silicate (

 $\text{Cr}_2\text{O}_3$  (

Water

WT (g)

800.00

24.02

28.0252

1.4007

1.8002

1.2016

15.21

Fired at 900°F

3rd Coating - NW S1 BlackRaw Materials

Clay

#1 Wrentham Slate

 ~~$\text{ZnO}$  (Zinc 350, 0229)~~

Sodium Silicate (

Carbon Black (

Water

7.52

WT (g)

70.00

750.00

11.88

2.875

7.55

Fired at 750°F

Continued on Page

Read and Understood By

Signed

Date

Signed

Date

Method 3M #5, 350, 444 (Oct 15, 94)

1st Coating JWS 1-58-MARaw Materials

#11 Wrentham Slate

Clay (

Cu<sub>2</sub>O (Purple Copper HP11, 5359,

ZnO (Zinc 350, 0229,

Sodium Silicate (

Water

1, oxy ch 421

WT (S)

1000.00

30.00 ~~35.00~~

35.00

1.75 x 8

40.05

18.50

Fired at 750°F

2nd CoatingRaw Materials

#11 Wrentham Slate

Clay (

Cu<sub>2</sub>O (Purple Copper HP11, 5359,

ZnO (Zinc 350, 0229,

Sodium Silicate (

Water

1, oxy ch 421

WT (S)

750.04

82.52

26.25

1.9125

28.14

14.31

Fired at 750°F

3rd Coating NW 51 BlackRaw Materials

Clay (

#11 Wrentham Slate

Sodium Silicate (

Carbon Black (

Water

1, oxy ch 421

WT (S)

7.52 ~~7.5~~

750.01

14.70

2.1572

7.62

Continued on Page

Read and Understood By

JWS

Signed

Date

Signed

Date

AR Granules		just - 70 - A	* new formula
Round 1			* trying new amount of copper
Raw Materials			- side sheet, water, etc.
#1 Wierthman Slate			WT (g)
↓ 252	Clay		1000.00
	CaO (Purple Type HP3, Lot # 5457, Chemist)		22.50
	ZnO (Kedex - 720, Lot # 011085, ZCA)		23.0210
↓ 252	Sodium Silicate (Garschen 42)		1.7543
↓ 252	Water		30.01
			14.90

Fired at 670°F

## Round 2 AR TONER AR Granules

Raw Materials		WT (g)
#4 Wierthman Slate		850.00
Air Flashed Clay		17.00
Cr <sub>2</sub> O <sub>3</sub> Green Cr <sub>2</sub> O <sub>3</sub>		0.1481
ZnO (Purple Type HP3, Lot # 5457, Chemist)		0.2951
Zinc Powder Ten 8488X		276.04
Copper Carbon Black		0.1757
Sodium Silicate (Garschen 42)		26.60
Water		6.02

## AR Granules (w/ sprinkles) just - 70 - B

Raw Materials		WT (g)
#6 Wierthman Slate		500.00
Air Flashed Clay		15.00
CaO (Purple Type HP3, Lot # 5457, Chemist)		17.6705
ZnO (Kedex - 720, Lot # 011085, ZCA)		0.8752
Sodium Silicate (Garschen 42)		20.02
Water		9.81
* Sprinkles (Coke Mesh, No. 40/60's, 60/80's)		6.04

Fired at 650°F

Continued on Page 70

Read and Understood By

Justin D. Seaton

Signed

Date

Signed

Date

AR Granules (w/ sprinkles) JWS 1-71-A

Raw Materials

#11 Wrentham Slate

Air Floated Clay

Cu<sub>2</sub>O (Purple type HPB, Lot # 5454, Chemist)

ZnO (Kadox - 930, Lot # 011085, ZCA)

Sodium Silicate (Oxychem 42, Water)

\* Sprinkles (Coke bits, Nonperils Decors)

Fired at 650°F

AR Granules (w/ large sprinkles) JWS 1-71-B

Raw Materials

#11 Wrentham Slate

Air Floated Clay

Cu<sub>2</sub>O (Purple type HPB, Lot # 5454, Chemist)

ZnO (Kadox - 930, Lot # 011085, ZCA)

Sodium Silicate (Oxychem 42, Water)

\* Sprinkles (Coke bits, Rainbow Decors)

Fired at 650°F

AR Granules (w/ cane sugar) JWS 1-71-C

Raw Materials

#11 Wrentham Slate

Air Floated Clay

Cu<sub>2</sub>O (Purple type HPB, Lot # 5454, Chemist)

ZnO (Kadox - 930, Lot # 011085, ZCA)

Sodium Silicate (Oxychem 42, Water)

\* Superfine Cane Sugar (Domino Sugar)

WTC

500.01

15.00

17.6773

0.8755

20.00

9.52

15.01

WTC

500.00

15.00

17.6771

0.8752

20.01

9.50

15.01

WTC

500.00

15.00

17.6777

0.8752

20.00

0.61

15.01

Continued on Page 72

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Justin W. Sealer

Signed

Date

Signed

Date

~~AR Granules (w/ Regal Blue) jws-72-A~~

~~Raw Materials~~

<del>#11 Wrentham Slate</del>	<del>WT(g)</del>
<del>Air floated clay</del>	<del>500.00</del>
<del>Cu<sub>2</sub>O (Purple type #P3, lot #5454, Chemet)</del>	<del>15.01</del>
<del>ZnO (Kadox-930, lot #011015, 2 CA)</del>	<del>17.6750</del>
<del>Sodium Silicate (A/Longman 42)</del>	<del>0.8756</del>
<del>Water</del>	<del>20.01</del>
<del>* Regal Blue 400 (Celanese)</del>	<del>9.62</del>
	<del>15.01</del>

Fired at 650°F

too much Regal Blue  
could not use

AR Granules (w/ crushed walnuts #3) jws-72-B

Raw Materials

#11 Wrentham Slate	WT(g)
Air floated clay	500.00
Cu <sub>2</sub> O (Purple type #P3, lot #5454, Chemet)	15.01
ZnO (Kadox-930, lot #011015, 2 CA)	17.6750
Sodium Silicate (Oxychem 42)	0.8743
Water	19.99
* Crushed Walnut (#3 shell)	9.62
	15.02

Fired at 650°F

AR Granules (w/ crushed walnuts #5) jws-72-B

Raw Materials

#11 Wrentham Slate	WT(g)
Air floated clay (same as above)	500.01
Cu <sub>2</sub> O	15.00
ZnO	17.6750
Sodium Silicate	0.8738
Water	20.01
Crushed Walnut (#5 shell)	9.59
	15.00g

650°F

Continued on Page 73

Read and Understood By

Justin W. Seale

Signed

Date

Signed

Date

1st Coating  
~~AF Granules~~  
 1st Coating

Just 1-73-A  
 Fluids 3M formula for "Coating"

Raw Materials

	WT (g)
Extended Granules (CH30 Clay 252, Stone Dust 752)	330.00
Sodium Silicate (Pyrochem 42)	40.00
Air Floated Clay	30.00
Water	19.90
Cu <sub>2</sub> O (Purple type HP, Lot # 5454 Chemet)	35.0625
ZnO (Kodak-790 Lot # 811005, RCA)	1.7511

Fired at 650°F

2nd CoatingRaw Material

0.662 of 1000g

	WT (g)
Extended Granules (from 1st Coating)	330.00
Air Floated Clay	19.82
Cu <sub>2</sub> O (Same as above)	23.1078
ZnO	1.1560
Sodium Silicate (" " " ")	24.75
Water	12.62

Fired at 650°F

3rd Coating

NEW-50 BLACK

Raw Material

	WT (g)
Extended Granules (from first Coating)	360.01
Air Floated Clay (Same as above)	7.21
Kodak Silicate (" " " ")	12.20
Laporte Carbon Black	1.0357
Water	2.62

Total Cup 58  
 330 = 17.6% ⇒ 255 lb/ton granules

Continued on Page 74

Read and Understood By

Just W Seal

Signed

Date

Signed

Date

AR Granules (LH 040-2) for NW-S1 BLACK JLS-74-A

Raw Materials

LH 040-2 AR Granules  
Air Baked Clay ( " " )  
Ogishima Black ( " " )  
Sodium Silicate (Ogishima 42, 200-06-20A)  
Water

WT (lb)  
398.60  
7.27  
15.25  
12.48  
2.92

Fired at 650°F

AR Granules (w/ whelk shells, #4) JLS-74-B

Raw Materials

#11 Wrentham Slate ( " " )  
Air Baked Clay (same as above)  
Sodium Silicate ( " " )  
Cu<sub>2</sub>O (Purple type HP3, Lot #5454 chemist)  
ZnO (Kadox-930, Lot #011085)  
Water  
Whelk shells (#4 shell)

WT (lb)  
500.00  
15.01  
19.98  
7.6748  
0.8743  
2.21  
15.25

Fired at 650°F

AR Granules

~~JLS-74-A~~  
JLS-74-C

\* new formula  
- one coating copper

Raw Materials

#11 Wrentham Slate  
Clay  
Cu<sub>2</sub>O (Purple Type HP3 Lot #5454 chemist)  
ZnO (Kadox-930 Lot #011085)  
Sodium Silicate (Ogishima 42)  
Water

WT (lb)  
1000.00  
22.50  
23.2102  
1.7515  
30.02  
14.90

Fired at 650°F

Continued on Page

75

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*Justin W. Sealer*

Signed

Date

Signed

Date

Al Granules, new formula (Continued from ~~page 74~~)  
 2nd casting - NWBLACK  
 Raw Materials  
 Al Granules (JWS1-74-e)  
 Air-dried Clay  
 Laporte Carbon Black  
 Sodium Silicate (20% soln 42)  
 Water  
 Fired 650°F

	JWS1-74-C
	LTC
	900.01
	18.01
	258.72
	28.113
	6.38

### Extended granules:

① LH040-2 ⇒ JWS1-74A

330g granules, 11.55g Cu<sub>2</sub>O x 2, NW51 black

② JWS1-73A

330g granules, 35g Cu<sub>2</sub>O + 23g Cu<sub>2</sub>O, NW51 black

Continued on Page

Read and Understood By

Justin U. Scarle

Signed

Date

Signed

Date



# LABORATORY NOTEBOOK

Notebook No.: One

Assigned to: Adam Wolfgang

Date: \_\_\_\_\_

email: alw29@drexel.edu

cell phone: 570-265-3249

Use Naige Cat. No.

6301-1000

to reorder.

Copyright 1973, Naige Company  
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Copper-Coated Granules a.k.a 1-7A (same as just 1-6A)

## 1st Coating

## Raw Materials

	Wt (g)
#11 Wrentham Slate	1000.00
Clay	30.01
CO <sub>2</sub> O (Purple Type HP3, lot #5454, Clement)	35.0270
ZnO (Kadox-920, lot #011085, ZCA)	1.7512
Sodium Silicate (Oxychem 42)	40.01
Water	19.61

Fired At 650°F

- granules were clumpy after first coating

## 2nd Coating

## Raw Materials

	Wt (g)
#11 Wrentham Slate	625.00
Clay	18.76
CO <sub>2</sub> O (Purple Type HP3, lot #5454)	21.8921
ZnO (Kadox-920, lot #011085, ZCA)	1.0938
Sodium Silicate (Oxychem 42)	25.01
Water	12.26

## 3rd Coating

## Raw Materials

	Wt (g)
#11 Wrentham slate	600.00
Clay	12.02
Laport Carbon Black	1.7271
Sodium Silicate (Oxychem 42)	5.757
Water	18.75
	4.27

Continued on Page

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Date

Copper Coated Granules

alw 1-38

Round 1

\* 30g Sugar / 35g Cu<sub>2</sub>O

Raw Materials

	wt (g)
#11 Wrentham Glaze	1000.00
Air Floated Clay	30.00
Cu <sub>2</sub> O (Purple Type HPS, Lot #5454 Chemet)	35.0010
ZnO (Kador 920, Lot # 011085 ZCA)	1.7570
Sodium Silicate (Oxychem 42)	40.00
Water	15.00
Pamino Sugar (Superfine Cane Sugar)	30.00

Fired at 650°F

Round 2

Raw Materials

	wt (g)
Copper Coated Granules (alw 1-38)	800.00
Air Floated Clay	16.00
Laporte Carbon Black	2.2991
Sodium Silicate (Oxychem 42)	24.00
Water	13.00
	<del>56</del> 10.00

Fired at 650°F

\* after Round 1, dry Cu<sub>2</sub>O coated granules were mixed with 10ml water and tumbled for 10 minutes to break up the clumpy granules before applying the pigment coating.

\* amount of water used in pigment coating was increased to help maximize coverage.

Continued on Page

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Signed

Date

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Date

Copper Coated Gravel

alw1-48

Round 1

#15g Walnut Shell / 55g Cu<sub>2</sub>O

## Raw Materials

#11 Wrentham Slate

wt (g)

Air Floated Clay

1000.00

Cu<sub>2</sub>O (Purple Type HP3, Lot #5854, Chemet)

29.98

ZnO (Kadox 920 Lot #011055)

35.00

Sodium Silicate (Dowchem 42)

3CA1

1.7500

Water

40.00

Walnut Shell #6

25.00

15.00

Fired at 650°F

Round 2

## Raw Materials

Copper Coated Gravel (alw1-48)

wt (g)

Clay

865.00

Laporte Carbon Black

17.50

Sodium Silicate

2.57

Water

27.20

11.00

Fired at 650°F

Continued on Page

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Date

## Normal PR Grounds trial

16 ton/hr production rate

Variables only at Normal plant  
\$ 244.96 per hour

Total Cost is \$ 304 / hr, Variables + fixed

⇒ Variables \$ 15.31 per ton

30.00 base rock cost

16.00 silicate, clay, etc pigments  
\$ 61.31 per ton

For 30 tons, ⇒

Cost ⇒ \$ 1,860 one cost

\* Second Cost : \$ 15.31

12.00 lower normal cost

no	Variables	Grand Total
(copy)	Cost	\$ 88.62 / ton

\* Start at 9:30 pm, really start ~ 10 AM

4000 lb bath (4000 bare rock)

wt pigments 4.55% ash	Bare rock (1000)	4000	
(4.6%) Clay	(20)	80	[56]
(0.16%) CuO	(50)	200	
	(1.75)	7	
	Silicate	(37.5)	150 [60] total solids
	H <sub>2</sub> O	(15)	60 [0]
	Walnut shell	(15)	60 (Vanillin 2)

nominal NW products  
is < 30 lb pigments

4347 lbs

638% ;  $\Rightarrow$  15g/kg bare rock

Do 8 batches in a row  
for CuO/ZnO, then 8 batches in a  
row for CuO/ZnO/walnut

Mixing time : 7.5 minutes

$\Rightarrow$  8 bath ~ 1 hr

~~CaO~~ <sup>comes</sup> ~~from~~ in 1100 lb/bag

Walnut shell in 2000 Superfine

ZnO in 50 lb/bag

---

It's 40 minutes run time from the time  
the mixture dries dropped to the best to  
finished

---

The flame color is grey greenish rather  
than yellowish (standard) due to the  
emission color of CaO

---

Wick clay is ~ 5¢/lb (clay) ~ 100/ton  
Silica (40% solids) ~ 8¢/lb

(one transition from previous run)  
After 8<sup>th</sup> batches of coal/ind. only,  
start the transition batch at 11 AM.

This batch has 60 lbs walnut shell  
plus 50 lbs carbon black pigment to make  
- Or <sup>as</sup> the transfer.

The next 8 batches has only  
coal/ind/walnut shell, of course no  
carbon black.

Color  
granule

16 ton/hr  $\rightarrow$  4 ton/day  $\Rightarrow$  17 ton/day

5.4 ton/day, 5.5 ton/Wk



Produce 12 supersacks of corn/2nd only

u 15 ~ ~ ~ corn/2nd/walnut

Base note	Color	(corn/2nd only)	
		<u>no nuts</u>	<u>w/ nuts</u>
L	34.67	+ 6.06	- 4.88
a	1.44	+ 9.02	1.41
b	5.03	+ 5.08	- 0.61
NE		11.99	5.11

"Alkalinity" per Tom's method: 0.50 2.35

Color granules usage in shingles

25 tons per 6000 squares

## NW AR granules - day 2

### Coloring process:

- Start w/ 2 bags of ~~new~~ ~~no~~ ~~not~~ ~~of~~ ~~granules~~, using NW 71 formula. Measure color
- Next, go to the granules w/ units; run all the bags. Measure color. NW 71 formula starts we've one more chance of changing pigment to ~~for~~ match 3M LR7000 color
- Finish off w/ the remaining no units granules,

\* 2 bags is one batch of 4000 lbs  
Each bag holds ~~1800~~ 1900 lbs - 2000 lbs

\* start at 8 AM the coloring process

Load the bags to the conveyor belts,  
treaty them as "std <sup>any</sup> base rate"

NW71 standard

clay	80	(56)
M. Map 6 Tan 15	8.80	

120 Red	1.60
---------	------

Green Olive	1.70
-------------	------

807 DAVIS black	2.90
	<hr/>
	69.5

w/o nut, 1<sup>st</sup> 2 Dns;

$$\Delta E = 3.6.$$

So the next foundation for w/o no nuts:

Tan	7.00
-----	------

Green Olive	1.50
-------------	------

Red	0.00
-----	------

Black	2.90 (no change)
-------	------------------

The one w/ nuts has  $\Delta E = 3.90$ ,  
but visually, it's pr. pretty good.

⇒ w/o nuts has, NW71 foundation

Labeling :

Type I : No nuts

Type II : with nuts

---

Total BR granules

(1) Type I, no nuts

4 pack, ~ 4 tons

(2) Type 2, with nuts

3 pack, ~ 3 tons

no nuts, still hot

$$\Delta L = -1.56$$

$$\Delta a = 1.57$$

$$\Delta b = 0.45$$

$$\Delta E = 2.26$$

with nuts nuts, w still hot

$$\Delta L = -3.78, -3.17$$

$$\Delta a = 0.96, 1.63$$

$$\Delta b = -0.29, 0.73$$

$$\downarrow$$
$$\Delta E = 3.90$$

$$\downarrow$$
$$\Delta E = 3.64$$

NW 71 take

$$L = 34.67$$

$$a = 1.44$$

$$b = 5.03$$

cur 1	cur
+4	+4
+2	+1
+4	+3

S: 50 1/2  
B: 16  
J: 9 1/2

TRIAL 196  
RUN

M. Nave <sup>at IT</sup> 4 1/2 3 1/2  
7369.0 49.5 Wren  
7369.5

<sup>at IT</sup> 6 Batches 1 3/4 6 1/4  
(1.4) 14 Batches FB-SI = 22.5

7432.1 63.7 Base  
7369.0

6 Batches <sup>at IT</sup>

<sup>at IT</sup> Doherty 4 4

Da Silva 8  $\phi$   
64 Batches FB-SI = 132.5

7523.3  
7432.7 = 90.6 Wren

<sup>at IT</sup> Da Silva 8

<sup>at IT</sup> Doherty 8

64 Batches FB-SI = 138.5

7716.7 = 193.4 Wren  
7523.3

Finish Tanks

#1- 3

2- 3 1/2

3- 7

11 Base- 20 1/2

9 Base- 23

781.68

Rec'd 1 1/2" Wren Rock @ 1000 (30)

702.75 T

Sold fine (10)

311.12 T

Sold Base to F&G

186.3 T

Sold Waste to F&G

3.0 T

Sold FB-SI to F&G

(142.5)

293.5 T

S: 25 1/2  
B: 16  
J: 10

CH	COL
24	24
24	22
16	12

TRIAL RUN

OT IT  
3 3/4 4 1/4

Reve 8  
244 Wren

36 Batches FB-53 = 52.8 T

170.5 BASE

(1.4)  
TRIAL (50.8)  
(2.3)

Labiosa / or IT  
Dafila 8 8

Reve / or IT  
8 8  
194.8 Wren

(2.1) 50 Batches FB-53 = 114.5  
13 Batches FB-55 = 16.0

OT IT  
8 8  
138.6 Wren

OT IT  
Dasilva 8 8  
64 Batches FB-55 = 133.0

46.4 BASE

Final Totals

- 1- 3
- 2- 3 1/2
- 3- 12
- 11 BASE - 5
- 9 BASE - 12

30610

1 1/2" Wren Rock o turn (20)

709.0 T

del from to :

10

341.3 T

del Base to FBG

155.8 T

del Waste to FBG

20.8 TRIAL

26.6 T

del FB-53 to FBG 80 B

(10.1 ms)

167.3 T

del FB-55 to FBG 77 B

(9.7 ms)

149.0 T

10 (10) 24

- The barone belt stopped again - 3<sup>30</sup> pm. Got to change the DRIVE side bearing - it's bad! Tony & Kevin changing it now.

- 545 into 33 = 17' (31 = 15')

61 - (Reminder for Joe K.) Will need del Jim's P.M.<sup>2</sup> Sunday in order to update (color code) the weekly P.M. (Sometimes Tuesday - I'll need then)

7-7A

- Sent over 68.6 Tons of Base to #1 & #2 silos.

- Making F8-93 going into silo #16-30' at 5<sup>30</sup> #18-15' #27-12'

7-3

ROOFING IS RUNNING APPROX 7200 BUNDLES OF LANDMARK 25 WEATHERWOOD AFTER THE CANNON STATE. THEY WILL RUN IT TIL THEY ARE OUT OF CT-50 BLACK; THEN THEY WILL RUN COBALTSTONE UNTIL 6AM. (CHANGE OVER TO 305)

WIND (FAL) WASH G-4 (10 HANG) G-12 (FAL)  
B-1 (FAL)

(FAL #3) BASE (FAL) WASH (FAL)

- There is a bunch of (unlabeled) things in the (unlabeled) storage area. Some of the things are "unlabeled" and some are "labeled".



NORTHON COMMITTEE, L. E. A. U. C. IN THE GUARDIAN, 19.

Ad - Lott - John, see a 140 for the locker-room booth  
will call you 4:45 for Wed. A.M.

- I called shipping to get the Brodie guy in here for  
the job left that needs a vaporizer - Wednesday

- Salsate is ordered for Wed.

#4 belt won't run - might be the AC TECH

→ DENO, NO SPARKS  
→ Upon S/U o' FBK 4pm - top of unit sl shifted 2'

for Del Jins: (1) change C-12A reducer oil  
DRIHT (2) replace the dewater feed pipe  
(3) start putting the other 2 m.  
trunks together

approx 55 mtr ; { 17-56' } } saving o.  
{ 28-30' } }

S/U FBW @ 4<sup>30</sup> AM -

cel -

cel

7P-7A

- I had DeHino put a canvas over the little hopper over incoming belt.
- DeHino couldn't use new shafts for Trunnions because they were wrong size, so he used old shafts.
- Making FB12 going into silo #6-40' at 5<sup>30</sup> #5-40'.

7-3

SIDING IN

FBK: ~~G-10 (12:10 PM)~~ B-1 (10 HOURS) CT-50 (12:10 AM)  
DBL WAS IN MARCH 7 PREPARE FOR TREAT RUN

FBW: WHEN (FILL #3, #1, #3) BARS, WHEN

- SEPTIC TANKS ARE GOING TO BE PUMPED OUT TOMORROW. WAS EXPOSED THE CAUSING TODAY.

Reborn

- When I sent Dave was (this afternoon): when DeLore went to look out 9 & 11 base tanks - #9 base tanks valve rolled over opening - then closing. And when it opened some base was released. So give it ~~at~~ the bells at least 4 minutes to clear after the lead man looks out the base valves

- Set us 87.2 g base

reborn

- Please have set line change the shafts on 2 of the turning he did last night. He put them in back-wards.

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